



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/674,648 | 01/05/2001 | Bodo Furchheim | 7054-101XX | 1304 |

167 7590 03/28/2006

FULBRIGHT AND JAWORSKI LLP
555 S. FLOWER STREET, 41ST FLOOR
LOS ANGELES, CA 90071

| |
|----------|
| EXAMINER |
|----------|

KIM, CHONG HWA

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3682

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,648

Applicant(s)

FURCHHEIM ET AL.

Examiner

Chong H. Kim

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 8, 11, 12 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 11, 12 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 12 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 recites the language “its” in line 2. It is indefinite because it is not understood which element the word “its” is referring to.

Claim 14 recites the language “preferably” in line 2. It is indefinite because it is not clear whether the elements following the word are part of the claim or not.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 8, 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki, U.S. Patent 4,660,269.

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearing rings 3 attached thereto, the method comprising the following steps;

Art Unit: 3682

placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method;

placing the tube and the bearer rings in a high internal pressure forming tool 20;

applying axial forces to the ends of the tube;

applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube;

characterized in that in a step prior to such high internal pressure forming, regions that lie at the end of the tube outside the regions in which the cams are seated, are upset that same are increased in thickness for forming different functional elements 6;

characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size;

characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube;

characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool;

characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads;

Art Unit: 3682

characterized by additional drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method;

characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and

characterized in that the bearer rings are hardened prior to application on the formed cams.

5. Claims 1-5, 8, 11, 12, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebbinghaus et al., U.S. Patent 5,259,268.

Ebbinghaus et al. shows, in Figs. 1-7, a method for the manufacture of a camshaft from a tube 12, the cam shaft having bearer rings 14 attached thereto, the method comprising the following steps;

placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view) and the necessary hardness, strength, and wear resistance, in a separate method;

placing the tube and the bearer rings in a high internal pressure forming tool;

applying axial forces to the ends of the tube;

applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams (as shown in Fig. 2) from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube (inherent since the specification states that the tube

Art Unit: 3682

is placed in a closed mold and applied with the internal pressure and axial forces as described in column 3, lines 5-17);

characterized in that in a step prior to such high internal pressure forming, regions that lie at the end of the tube outside the regions in which the cams are seated, are upset that same are increased in thickness for forming different functional elements 16 and 18;

characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size (see Fig. 1);

characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube;

characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool;

characterized in that the bearer rings consist of sintered metal, or plastic, or ceramic material;

characterized in that the tube consists of aluminum or titanium; and

characterized in that the bearer rings are hardened prior to application on the formed cams.

6. Claims 8, 11, 14, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hartnett et al., U.S. Patent 4,781,076.

Hartnett et al. shows, in Figs. 1-7, a cam shaft comprising a tube 13, regions of the tube defining hollow cams, as shown in Fig. 1, 4, and 7, in form and in position in a single piece, and

Art Unit: 3682

that on the formed cams a bearer ring 10, 12, 14 having an even wall, shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner; wherein the bearer rings consist of sintered metal; wherein additional drive and control element secured to the tube (inherent); and wherein at least one radially extending groove 22, 24, 26 is produced in the bearer rings and the drive and control elements 14; and wherein the bearer rings are hardened.

(note: applicant is reminded that although the product by process claim is permissible, the process in which the product is made cannot be given patentable weight in a product claim.

Claim 8 and its dependent claims are considered product claims. Therefore, since the limitations such as “the internal high pressure forming method”, or “the bearer rings are hardened prior to application on the formed cams” is a process in which the cam shaft is formed, it is not given patentable weight. See MPEP § 2113.)

Response to Arguments

7. In response to applicant's argument that Suzuki fails to show bearer rings, the cams are not formed of the material of the cam shaft tube, and the bearer rings do not have even wall thickness, it is Examiner's view that Suzuki show every element recited in claim 1. Suzuki shows, as discussed above in the rejection of claim 1, the method for the manufacturing of a cam shaft from a tube by placing bearer rings 3 in correspondence with prospective locations of the hollow cams on the cam shaft. The prospective locations of the hollow cams on the cam shaft are shown in Figs. 1, 4, 11, and 12 where reference number 3 are indicated. Those prospective locations are in correspondence with the bearer rings 3. The elements 3 are considered bearer

Art Unit: 3682

rings since the elements are separately formed from the tube 2 and they surround the tube at the prospective locations to form the hollow cams. Moreover, the regions (near the reference number 3) to form the hollow cams are formed from the material of the tube. Furthermore, the bearer rings have an even wall thickness in the axial direction of the tube.

8. In response to applicant's argument that Suzuki fails to show the bearer rings being frictionally and interlockingly attached to the hollow tube cams by expansion of the tube, it is shown by Suzuki, in Figs. 4 and 12, the cam shaft tube having the outer diameter that is smaller than the inside diameter of the bearer rings 3 in a pre-expansion process. After the expansion of the tube, as shown in Figs. 1 and 11, it is clear that the tube has been expanded so that there is a frictional and interlocking attachment of the bearer rings 3 and the tube 2, because there isn't anymore of the space formed between the bearer rings 3 and the tube and the tube has been expanded enough so that the portions inbetween the bearer rings 3 protrudes out more than the regions where the bearer rings are attached.

9. In response to applicant's argument that Suzuki fails to show irregular shape formed on the tube after expansion, it is the Examiner's view that such limitation is not recited in the claims. Claim 1 recites the method steps comprising "placing bearer rings in correspondence with prospective locations of hollow cams on said cam shaft..." Such recitation, the Examiner believes, does not clearly claim the irregular shape formed on the tube after expansion. Rather, in Examiner's interpretation, the recitation is simply claiming that there are prospective locations of hollow cams on the cam shaft and that bearer rings are in correspondence with such prospective locations. Certainly, Suzuki shows that limitation as discussed above.

Art Unit: 3682

10. In response to applicant's argument that Ebbinghaus et al. shows "the expanded parts from even rings on the surface of the tube, and not cams," it is not clear which element the applicant is referring to. Without clearly pointing out which element the applicant is referring to in the Figures shown by Ebbinghaus et al., it is not possible for the Examiner to respond properly. Furthermore, such argument fails to link the recitation in the claims in which the argument is based on.

11. In response to applicant's argument that Ebbinghaus et al. fails to show the cams being formed from the material of the shaft tube and the bearer rings are for reinforcement, it is shown in Fig. 2 of Ebbinghaus et al. the cam being formed from the material of the shaft tube 12 and the bearer rings 14 being cams as well as being used for reinforcement.

12. In response to applicant's argument that the arguments made in respect to Suzuki are equally applicable with respect to Ebbinghaus et al., it is the Examiner's view that without specific points regarding Ebbinghaus et al.'s rejection, the response to such broad statement can not be given.

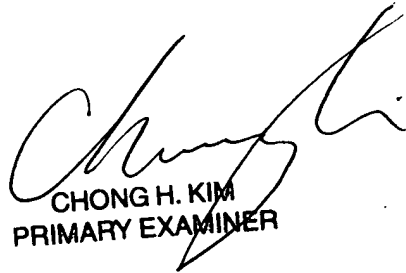
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (571) 272-7108. The examiner can normally be reached on Monday - Friday; 6:00 - 2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3682

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

chk
March 22, 2006



CHONG H. KIM
PRIMARY EXAMINER

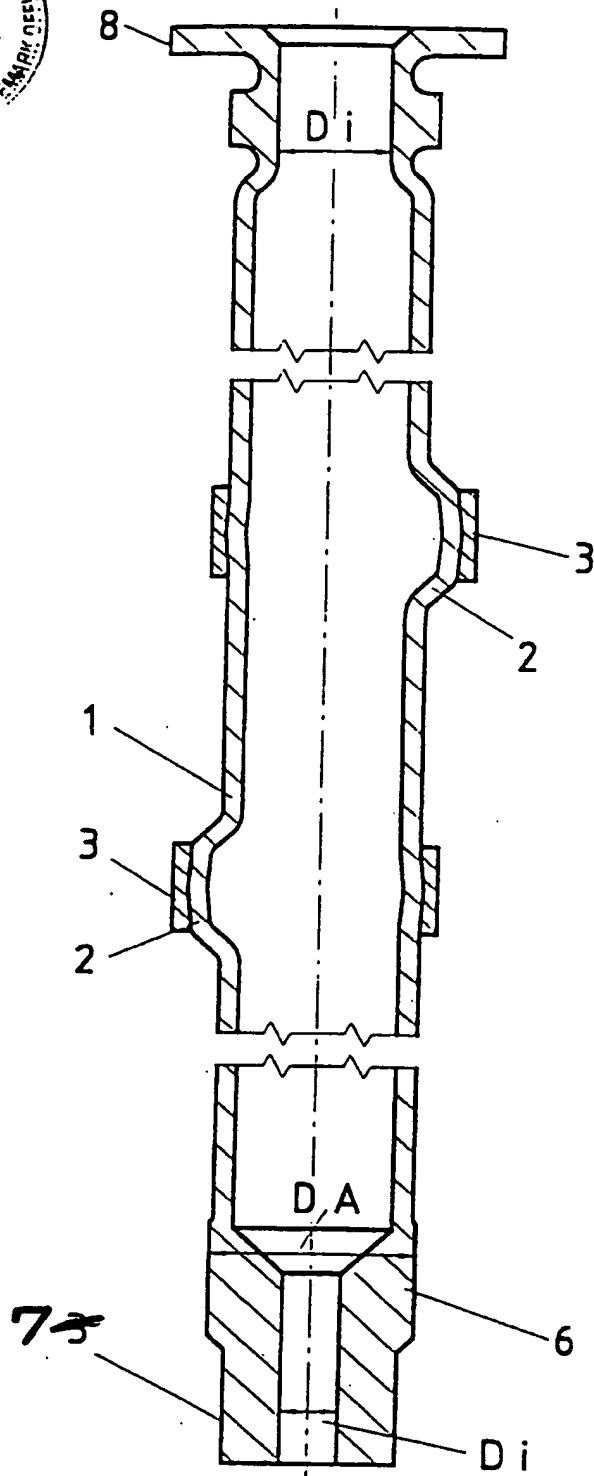
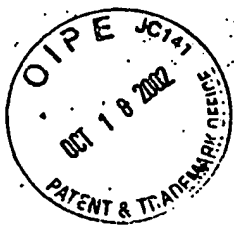


Fig 4

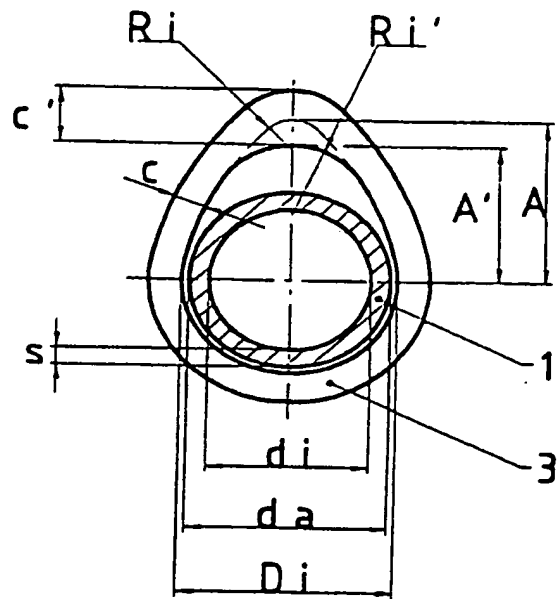


Fig 5

Approved on 3/22/06